

Abstract Submitted
for the Precision Measurements Society
Bay Area Chapter
November 15, 1995

Laser Absorption Spectroscopy as a Robust Tool for Process Control*

Leon V. Berzins, Thomas M. Anklam, Shirley Galanti, Chris A. Haynam,
David G. Braun and Matthew A. McClelland
Lawrence Livermore National Laboratory
Livermore, California 94550

Jonathan G. Storer
3M
Mendota Heights, Minnesota 55120

Laser absorption spectroscopy (LAS) is a common analytical technique used in the laboratory. At Lawrence Livermore National Laboratory (LLNL) we have been using LAS to monitor electron beam generated vapor plumes for over 15 years. During this time LAS has proven itself as an accurate and reliable method for monitoring both vapor density and composition. The availability of diode lasers over a wide range of wavelengths is transitioning this technique from a research tool to a robust measurement useful for process control. In this talk we describe laser absorption spectroscopy and how it can be used as a component of a process control system. Potential applications such as composition control in the production of metal matrix composites or aircraft alloys will be discussed.

Leon Berzins has been at LLNL for 14 years. He received his Ph.D. in plasma physics from UC-Davis in 1988 while working in the magnetic fusion program. Since that time he has been working for the laser isotope separation program characterizing the properties of electron beam generated vapor plumes. His chief interest is developing laser spectroscopy into a useful tool for plant process control.

* This work was performed under the auspices of the U.S. Department of Energy by Lawrence Livermore National Laboratory, the United States Enrichment Corporation and the Advanced Research Projects Agency under contract No. W-7405-Eng-48.

